

REMARKS

Claims 1-6 are currently pending in the present application.

Claim 1 has been amended to recite that the weight percentages of nylon 66, aromatic polyamide resin, and nylon 12 are 60 to 98%, 1 to 25% by weight, and 1 to 15%, respectively. Support for this amendment may be found in the specification at least at page 8, lines 5-11.

Additionally, claim 5 has been amended to replace “antifreeze resistance value” with “resistance to antifreeze index,” which is supported in the specification at least at page 15, lines 1-7, and to recite that the antifreeze index is 82 to 88%, which is supported at least at page 18, Table 1, Examples 2-3. No new matter has been added by these amendments. Further, it is respectfully noted that these amendments raise no new matter and do not require the Examiner to perform a new search and thus are proper after final. Entry is respectfully requested.

At the outset, Applicants acknowledge and appreciate the time and consideration provided to Applicants’ undersigned representative, Sandra Katz, during a brief telephone interview on September 21, 2006. During the interview, the Examiner agreed that the amendments to claim 1 should overcome the prior art rejection based on Hayashi and the abstract of JP ‘448. Accordingly, it is respectfully submitted that the pending claims are in condition for allowance.

In the Office Action, the Examiner has rejected claim 5 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner argues that the phrase “antifreeze resistance value” is not supported in the specification. Claim 5 has now been amended to recite “resistance to antifreeze index,” which is supported in the specification as noted above. The Examiner also argues that there is no support for the entire range of “greater than about 70%” or the endpoint of 70%. While not necessarily agreeing with the Examiner’s arguments, claim 5 has been amended to recite that the range is 82 to 88%, which is supported in Table 1 of the application. Accordingly, Applicants respectfully submit that claim 5 is fully supported in the specification, and request reconsideration and withdrawal of the § 112, first paragraph rejection.

The Examiner has also maintained the rejection of claims 1-4 and 6 under 35 U.S.C. §103(a), as being unpatentable over WO 95/20630 of Hayashi ("Hayashi") in view of Japanese Publication No. 57-080448 (hereinafter referred to as "JP '448"). Specifically, the Examiner contends that Hayashi teaches the claimed invention except for any reference to a combination of nylon 66 and nylon 12. However, the Examiner contends that JP '448 discloses a polyamide composition which improves the resistance of the resultant article to stress cracking and which comprises nylon 66, nylon 12 and glass fibers. Accordingly, the Examiner argues that it would have been obvious to one of ordinary skill in the art to include nylon 12 in the composition disclosed by Hayashi.

The Examiner further argues that although Hayashi does not explicitly disclose that the resin is amorphous as claimed, Hayashi allegedly discloses the same terephthalic/isophthalic units and an aliphatic diamine component as claimed, and thus concludes that it would inherently be amorphous.

In response to Applicants' previous arguments that the reference of Katayama shows that incorporating Nylon 12 into a composition with Nylon 66 would result in inferior weld strength, the Examiner argues that Katayama was not used as a reference in the rejection, and further that neither Hayashi nor JP '448 teaches that adding nylon 12 to nylon 66 would be counterproductive. In fact, the Examiner argues that it appears that combining components of the references would result in a polyamide composition with good calcium chloride resistance. Applicants respectfully traverse the Examiner's rejections and the arguments in support thereof for the reasons set forth previously on the record, which Applicants rely upon in full, and for the additional reasons which follow, and respectfully request reconsideration and withdrawal of the rejections.

Hayashi teaches a polyamide resin composition comprising an aromatic polyamide, an aliphatic polyamide, and an inorganic filler. Hayashi also teaches that resistance to calcium chloride is improved by including the aromatic polyamide and that fluidity is improved by including the aliphatic polyamide. Applicants do not disagree that Hayashi mentions nylon 66, nylon 6, nylon 612, and nylon 12 as examples of the aliphatic polyamide. However, only examples containing nylon 66 or nylon 612 are provided, and, as acknowledged by the

Examiner, Hayashi is completely silent as to a composition containing a combination of nylon 66 and nylon 12.

JP '448 teaches a polyamide resin composition comprising a polyamide resin containing 20 to 80 parts by weight nylon 66 and 80 to 20 parts by weight nylon 12, which have an inorganic filler compounded therein. JP '448 shows that resistance to calcium chloride (resistance to environmental stress-cracking caused by metal halide) is improved by nylon 12. However, when the proportion of nylon 12 is less than 20 parts by weight, resistance to calcium chloride is not improved.

Accordingly, even if one skilled in the art would have been motivated to utilize a combination of nylon 12 and nylon 66, as taught by JP '448, in the composition of Hayashi, such a motivation would only have resulted in including 20-80% of nylon 12. As taught by JP '448, including a smaller amount of nylon 12 would not have yielded the same resistance to calcium chloride. Therefore, even the proposed combination of references would not have led one skilled in the art to utilize only 1 to 15% by weight of nylon 12 as claimed.

Further, despite the Examiner's contention to the contrary, it would have been expected based on JP '448 that utilization of less than 20 weight % nylon 12 (such as the claimed 1-15 weight %) would not have resulted in increased resistance to calcium chloride.

It is known that when nylon 12 is compounded with nylon 66, deteriorated welding strength results due to the substantial lack of compatibility of the different nylon materials (see page 2, last four lines to page 3, line 1 of the present application). In fact, as shown in Comparative Example 4 of the present application, a sample containing 80% by weight nylon 66 and 20% by weight nylon 12 exhibited a welding strength as low as 81 MPa, which is significantly lower than the welding strengths exhibited by the inventive examples, which contain a concentration of nylon 12 within the claimed range of 1 to 15 weight %.

Hayashi also teaches at page 3, lines 25-29 that a composition containing nylon 66 mixed with a long chain aliphatic polyamide, such as nylon 612, nylon 610, nylon 11, or nylon 12, may be used to improve the chemical resistance of nylon 66. However, such a composition is described as having the disadvantage of poorer heat resistance than nylon 66.

Therefore, the combination of nylon 66 and nylon 12 is known to produce deteriorated welding strength and heat resistance compared with nylon 66 alone. Accordingly, one skilled in the art would not have been motivated to combine nylon 12 and nylon 66 based on the conventional knowledge and the teachings of Hayashi. In fact, the resin composition of Hayashi which contains an aromatic polyamide and nylon 66 has a sufficient degree of resistance to calcium chloride (see Table 3 of Hayashi and Comparative Example 3 of the present application). There is no suggestion in Hayashi that there would have been any motivation to modify such a composition to improve the calcium chloride resistance. Further, as explained above, even if one skilled in the art would have been motivated to modify the Hayashi composition to include nylon 66, such a motivation would only have led to the inclusion of 20 to 80 weight %, not 1 to 15% as claimed.

Applicants have realized that it is necessary to consider high resistance to calcium chloride, high resistance to antifreeze, good welding properties, and good product appearance as requirements for engine cooling system parts. The combinations of aromatic polyamide and nylon 66 according to the Examples of Hayashi have various problems. Specifically, in Example 1, in which the compounded amount of the aromatic polyamide is low, the resistance to antifreeze is as low as 64%. In Example 3, in which the compounded amount of the aromatic polyamide is increased, the resistance to antifreeze is improved to 82%, but the product appearance deteriorates. However, Applicants have found that a resin composition obtained by compounding 60 to 98% by weight of nylon 66, 1 to 25% by weight of an aromatic polyamide, and 1 to 15% by weight of nylon 12 is excellent in resistance to calcium chloride, resistance to antifreeze, welding property, and product appearance. Such results would not have been expected based on the prior art.

Thus, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness based upon the combination of Hayashi and JP '448. Accordingly, reconsideration and withdrawal of the rejection of claims 1-4 and 6 under 35 U.S.C. §103(a), are respectfully requested.

In view of the amendments and remarks made herein, Applicants respectfully submit that all pending claims fully comply with the requirements of 35 U.S.C. §112, are patentably distinct

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from the prior art of record, and are in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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Encl: Petition for Extension of Time (one month)